

WHAT IS CLAIMED IS:

1. A method for deterministic registration for communication networks comprising:
 - transmitting a node register command over a network, the node register command comprising:
 - a first plurality of bits and a second plurality of bits, the first and second plurality of bits addressing a range of nodes that should respond to the node register command; and
 - a plurality of time slot delays;
 - during each of the plurality of time slot delays, listening to the network for a response from a node in the range of nodes, the node determined by each of the plurality of time slot delays; and
 - responsive to detecting a response, determining a responding node corresponding to the response and designating the responding node as registered.
2. The method of Claim 1, wherein the second plurality of bits are padded with zeros.
3. The method of Claim 1, wherein the node register command further comprises a third plurality of bits.
4. The method of Claim 1 further comprising:
 - creating a confirmation packet comprising a second plurality of time slot delays;
 - transmitting the confirmation packet; and
 - during each of the second plurality of time slot delays, transmitting a signal based on a registration status of a corresponding node, the signal being a confirmation of the registration of the corresponding node.
5. The method of Claim 1 further comprising, during each of the plurality of time slot delays, calibrating a receiver during a first portion of each of the plurality of time slot delays.
6. Th method of Claim 1, wherein each of the plurality of time slot delays is a response period during which at most one node may transmit a message in response to the node register command.

7. The method of Claim 4 further comprising, during each of the second plurality of time slot delays, not transmitting a signal if the corresponding node is not registered.

8. A method for registering during a deterministic registration process comprising:

at a node, receiving a node register command addressing a range of nodes, the node register command comprising a plurality of time slot delays; determining whether the node is in the range of addressed nodes; responsive to determining that the node is in the range of addressed nodes, waiting for a proper time slot delay, the proper time slot delay being one of the plurality of time slot delays, the proper time slot delay corresponds to the node; and

transmitting a message during the proper time slot delay, the message being a response to the node register command.

9. The method of Claim 8, wherein the message is a 'true' signal.

10. The method of Claim 8 further comprising setting a tentatively registered flag.

11. The method of Claim 8 further comprising:

receiving a confirmation packet comprising a second plurality of time slot delays;

waiting for an assigned time slot delay, the assigned time slot delay being one of the second plurality of time slot delays;

during the assigned time slot delay, listening for a confirmation message; and

responsive to detecting a confirmation message, setting a registered flag.

12. The method of Claim 11, wherein the confirmation message is a 'true' signal.

13. A computer-readable storage medium having stored thereon computer instructions that, when executed by a computer, cause the computer to:

transmit a node register command over a network, the node register command comprising:

a first plurality of bits and a second plurality of bits, the first and second plurality of bits addressing a range of nodes that should respond to the node register command; and

a plurality of time slot delays, each of the plurality of time slot delays designated for one of the range of nodes to transmit a response message;

during each of the plurality of time slot delays, listen to the network for the response message; and

responsive to detecting a response message, determine a responding one of the range of nodes that transmitted the response message and designate the one of the range of nodes as registered.

14. The computer-readable storage medium of Claim 13, wherein the second plurality of bits is padded with zeros.

15. The computer-readable storage medium of Claim 13, wherein the computer instructions that transmit the node register command further comprise computer instructions that, when executed by a computer, cause the computer to:

create a confirmation packet comprising a second plurality of time slot delays;

transmit the confirmation packet; and

during each of the second plurality of time slot delays, transmit a confirmation message to indicate confirmation of the registration of a corresponding node, the corresponding node being one of the range of nodes.

16. The computer-readable storage medium of Claim 13, wherein the computer instructions that transmit the node register command further comprise computer instructions that, when executed by a computer, cause the computer to:

during a portion of each of the plurality of time slot delays, determine a level of noise in the network; and

set a threshold for a good signal, the threshold being above the level of noise.

17. The computer-readable storage medium of Claim 13, wherein each of the plurality of time slot delays comprises a calibration period and a response transmission period.

18. A computer-readable storage medium having stored thereon computer instructions that, when executed by a computer, cause the computer to:

receive a node register command addressing a range of nodes, the node register command comprising a plurality of time slot delays;

determine whether to respond to the node register command; and

responsive to determining to respond to the node register command, transmit a message during an assigned time slot delay, the assigned time slot delay being one of the plurality of time slot delays, the message being a response to the node register command.

19. The computer-readable storage medium of Claim 18, wherein the computer instructions that receive the node register command further comprise computer instructions that, when executed by a computer, cause the computer to set a tentatively registered flag.

20. The computer-readable storage medium of Claim 18, wherein the computer instructions that receive the node register command further comprise computer instructions that, when executed by a computer, cause the computer to:

receive a confirmation packet comprising a second plurality of time slot delays;

wait for an assigned time slot delay, the assigned time slot delay being one of the second plurality of time slot delays;

during the assigned time slot delay, listen for a confirmation message; and

responsive to detecting a confirmation message, set a registered flag.

21. The computer-readable storage medium of Claim 20, wherein the confirmation message is a '1' signal.

22. The computer-readable storage medium of Claim 18, wherein the message is a '1' signal.

23. A method for calibrating a receiver comprising:

during a first portion of a time slot delay, determining a level of ambient noise in a network;

determining a ceiling of the level of ambient noise;

setting a threshold for a good signal to a predetermined level above the ceiling of the level of ambient noise; and

during a second portion of the time slot delay, listening to the network for a signal.

24. A system for deterministic registration for communication networks comprising:

a means for transmitting a node register command over a network, the node register command addressing a plurality of nodes that should respond to the node register command, the node register command comprising a plurality of time slot delays, each of the plurality of time slot delays designated for one of the plurality of addressed nodes to transmit a response message;

a means for detecting a transmission of a response message during each of the plurality of time slot delays;

a means for determining a responding node responsive to detecting a response message, the responding node being one of the plurality of addressed nodes; and

a means for designating the responding node as registered.

25. The system of Claim 24 further comprising:

a means for creating a confirmation packet comprising a second plurality of time slot delays;

a means for transmitting the confirmation packet; and

a means for transmitting a confirmation message to indicate confirmation of the registration of the responding node during an appropriate one of the second plurality of time slot delays.

26. The system of Claim 24 further comprising a means for calibrating a receiver during a portion of each of the plurality of time slot delays.

27. A system for registering during a deterministic registration process comprising:

a means for receiving a node register command, the node register command addresses a plurality of nodes, the node register command comprising a plurality of time slot delays;

a means for determining whether to respond to the node register command; and

a means for transmit a message during an assigned time slot delay in response to determining to respond to the node register command, the assigned time slot delay being one of the plurality of time slot delays, the message being a response to the node register command.

28. The system of Claim 27 further comprising:

a means for receiving a confirmation packet, the confirmation packet comprising a second plurality of time slot delays;

a means for detecting a confirmation message during an assigned time slot delay, the assigned time slot delay being one of the plurality of time slot delays; and

a means for setting a registered flag in response to detecting the confirmation message.